

### LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (cancelled)
2. (cancelled)
3. (currently amended) Differential phase detector for generating a tracking error signal, having an input for receiving from the digitized signals of ~~four~~ at least two photodetectors, including the differential phase detector comprising: a multiplexer for that time multiplexing multiplexes the digitized signals; wherein it includes a demultiplexer / interpolator, coupled to the multiplexer, for synchronizing that receives the time multiplexed digital signals and synchronizes the samples from the time multiplexed digitized signals; and  
summing means for summing the synchronized samples of the demultiplexer/interpolator to generate a data signal.
4. (cancelled)
5. (currently amended) Differential phase detector according to claim 3, further including means for compensating an attenuation of high signal frequencies ~~caused by the interpolation~~ of an interpolated signal generated by the demultiplexer/interpolator, the compensating means including an input for receiving the interpolated signal.
6. (currently amended) Differential phase detector according to claim 3, wherein the demultiplexer /interpolator receives a time multiplex of N signals and wherein the demultiplexer/interpolator further outputs in that it generates N output channels, each of the N output channels operating at a speed equal to a speed of the multiplexed signal divided by at 1/D times the speed of the time multiplex, where D is an integer divider of N.

7. (currently amended) Differential phase detector according to claim 6, wherein the demultiplexer /interpolator receives a ~~four-signal~~ time multiplex of four signals and ~~in that it generates wherein the demultiplexer/interpolator further outputs four output channels, each of the output channels operating~~ at half the speed of the time multiplex.

8. (cancelled)

9. (currently amended) Method for differential phase detection, including the steps of:

- digitizing the output signals of four photodetectors,
- time multiplexing the digitized signals,
- synchronizing the samples from the time multiplexed digitized signals with a demultiplexer / interpolator, and
- generating a tracking error signal from the digitized and synchronized ~~signals~~ samples; and  
summing the synchronized samples of the demultiplexer/interpolator to generate a data signal.

10. (currently amended) Apparatus for reading from and/or writing to optical recording media, the apparatus comprising a differential phase detector for generating a tracking error signal and having an input for receiving digitized signals of at least two photodetectors, wherein the differential phase detector further includes: a multiplexer that time multiplexes the digitized signals; a demultiplexer / interpolator, coupled to the multiplexer, that receives the time multiplexed digital signals and synchronizes the samples from the time multiplexed digitized signals; and

summing means for summing the synchronized samples of the demultiplexer/interpolator to generate a data signal.

~~wherein it includes a differential phase detector according to claim 3.~~